FIG. 1

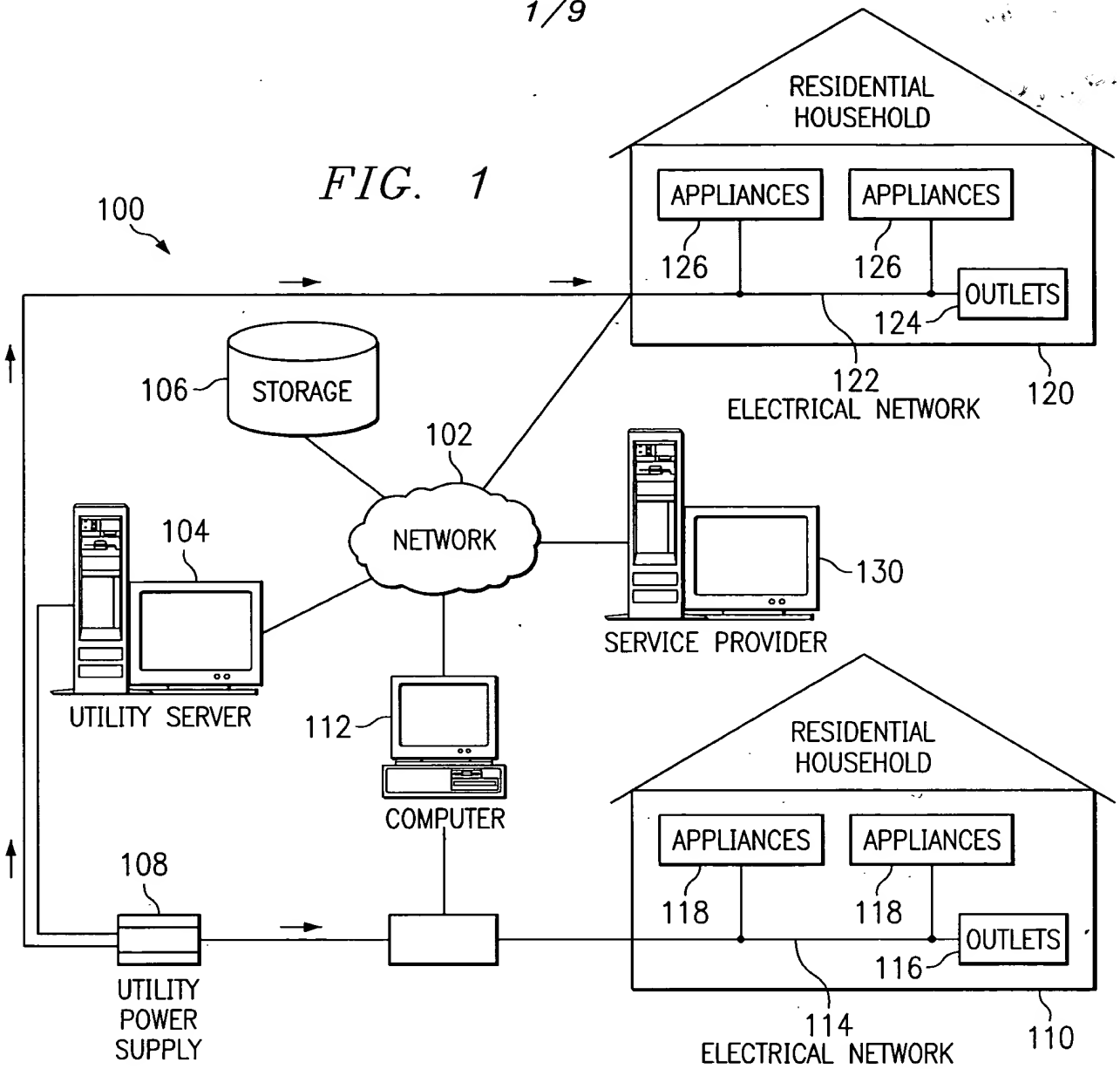


FIG. 4

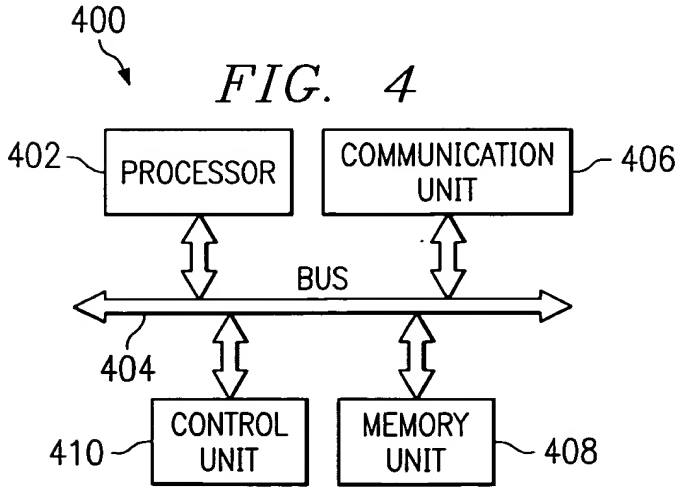


FIG. 5

CLASS	CLASS TYPE
A	CRITICAL
B	CONSTANT
C	NONCRITICAL

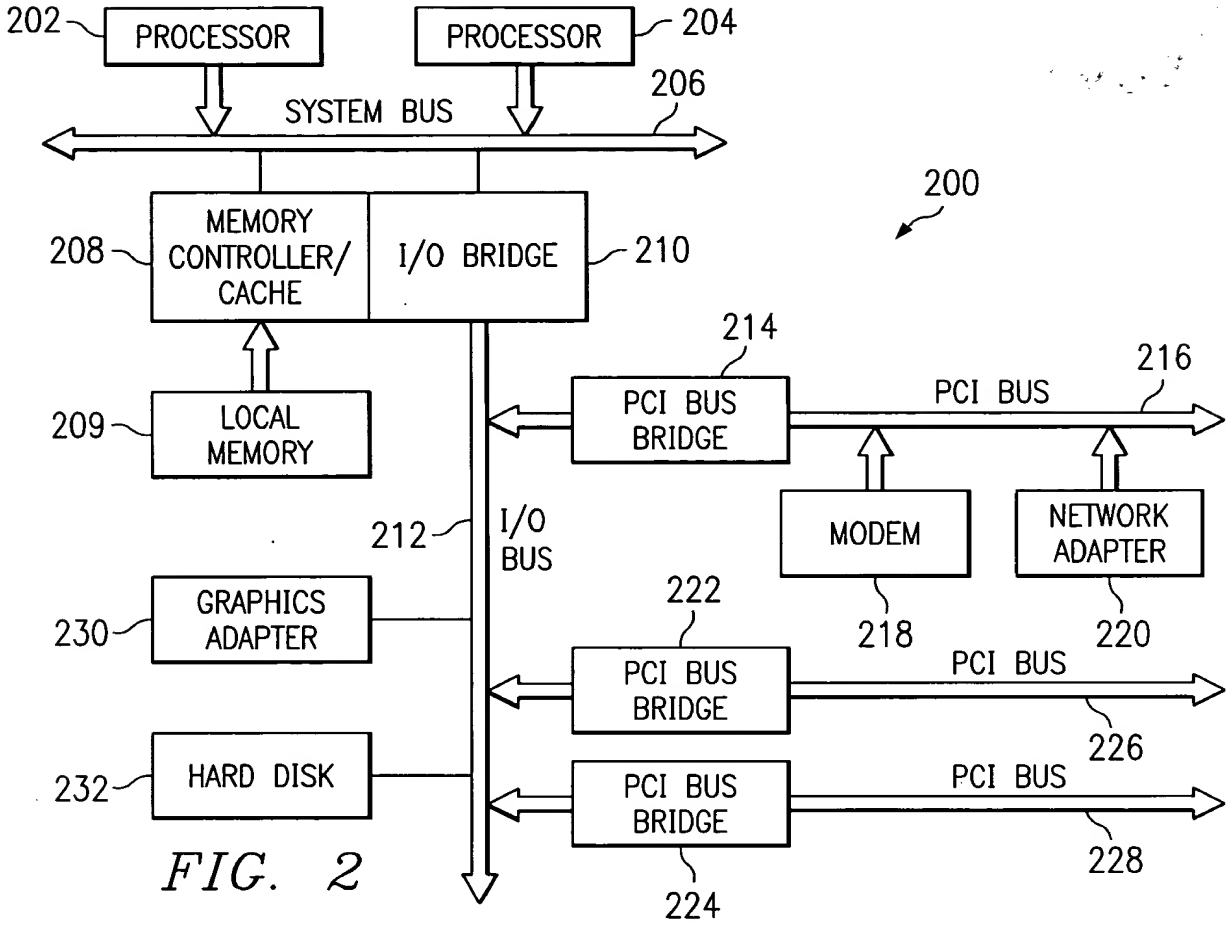

202
PROCESSOR
PROCESSOR
204
206
SYSTEM BUS
200
208
MEMORY CONTROLLER/ CACHE
I/O BRIDGE
210
214
216
PCI BUS
209
LOCAL MEMORY
PCI BUS BRIDGE
PCI BUS
212
I/O BUS
MODEM
NETWORK ADAPTER
222
230
GRAPHICS ADAPTER
218
220
PCI BUS BRIDGE
PCI BUS
226
232
HARD DISK
PCI BUS BRIDGE
PCI BUS
228
224

FIG. 2

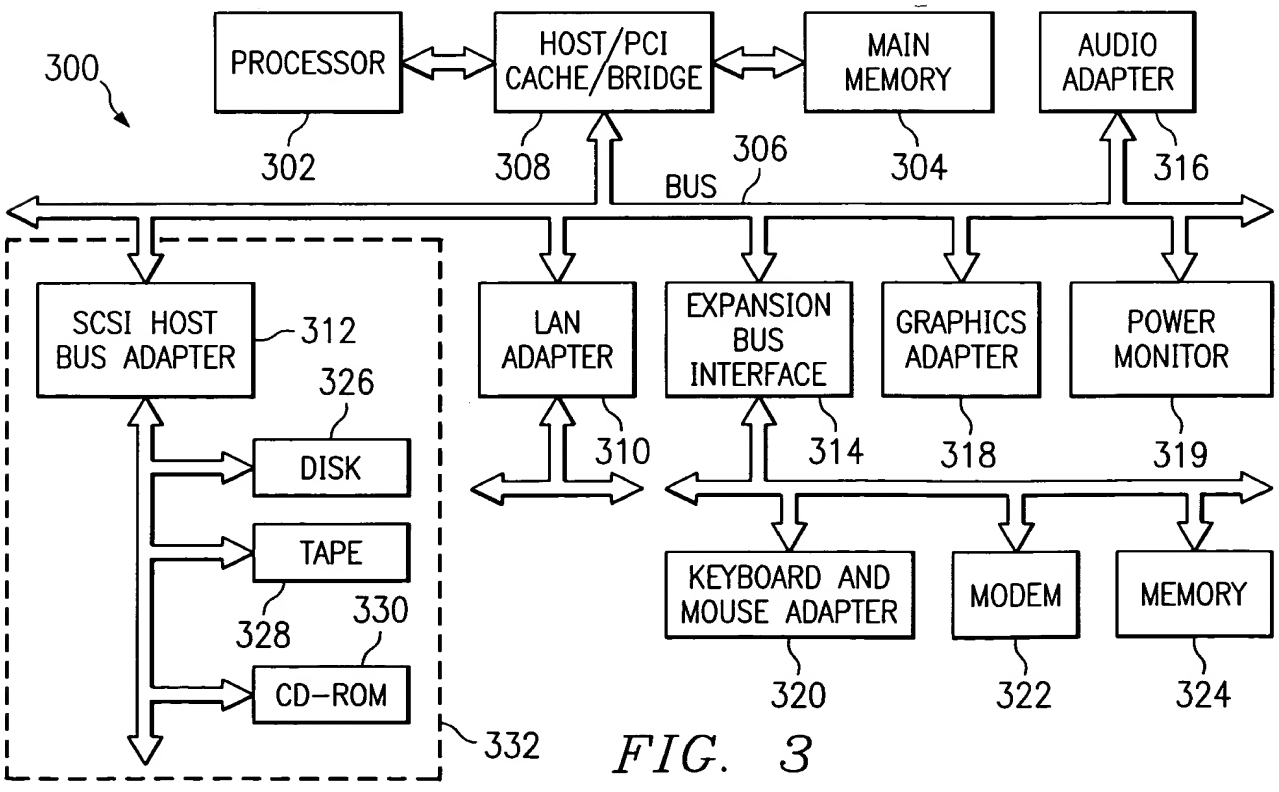

300
PROCESSOR
HOST/PCI CACHE/BRIDGE
MAIN MEMORY
AUDIO ADAPTER
302
308
306
304
316
BUS
SCSI HOST BUS ADAPTER
312
LAN ADAPTER
EXPANSION BUS INTERFACE
GRAPHICS ADAPTER
POWER MONITOR
326
DISK
310
314
318
319
TAPE
KEYBOARD AND MOUSE ADAPTER
MODEM
MEMORY
328
330
CD-ROM
320
322
324
332

FIG. 3

FIG. 6

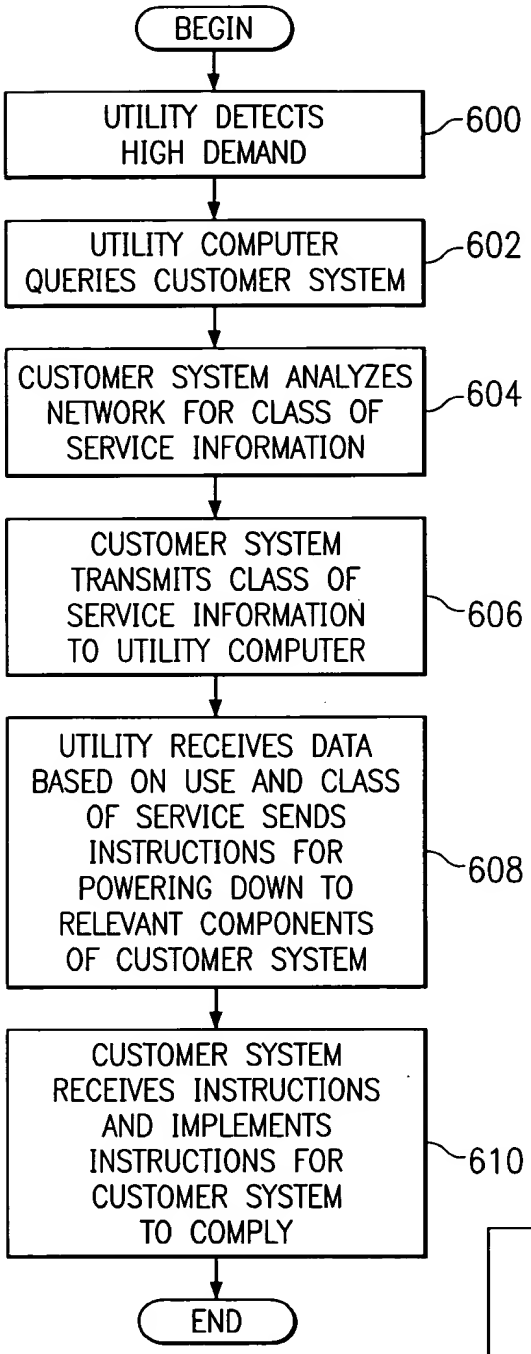

BEGIN
UTILITY DETECTS HIGH DEMAND
600
UTILITY COMPUTER QUERIES CUSTOMER SYSTEM
602
CUSTOMER SYSTEM ANALYZES NETWORK FOR CLASS OF SERVICE INFORMATION
604
CUSTOMER SYSTEM TRANSMITS CLASS OF SERVICE INFORMATION TO UTILITY COMPUTER
606
UTILITY RECEIVES DATA BASED ON USE AND CLASS OF SERVICE SENDS INSTRUCTIONS FOR POWERING DOWN TO RELEVANT COMPONENTS OF CUSTOMER SYSTEM
608
CUSTOMER SYSTEM RECEIVES INSTRUCTIONS AND IMPLEMENTS INSTRUCTIONS FOR CUSTOMER SYSTEM TO COMPLY
610
END

FIG. 7

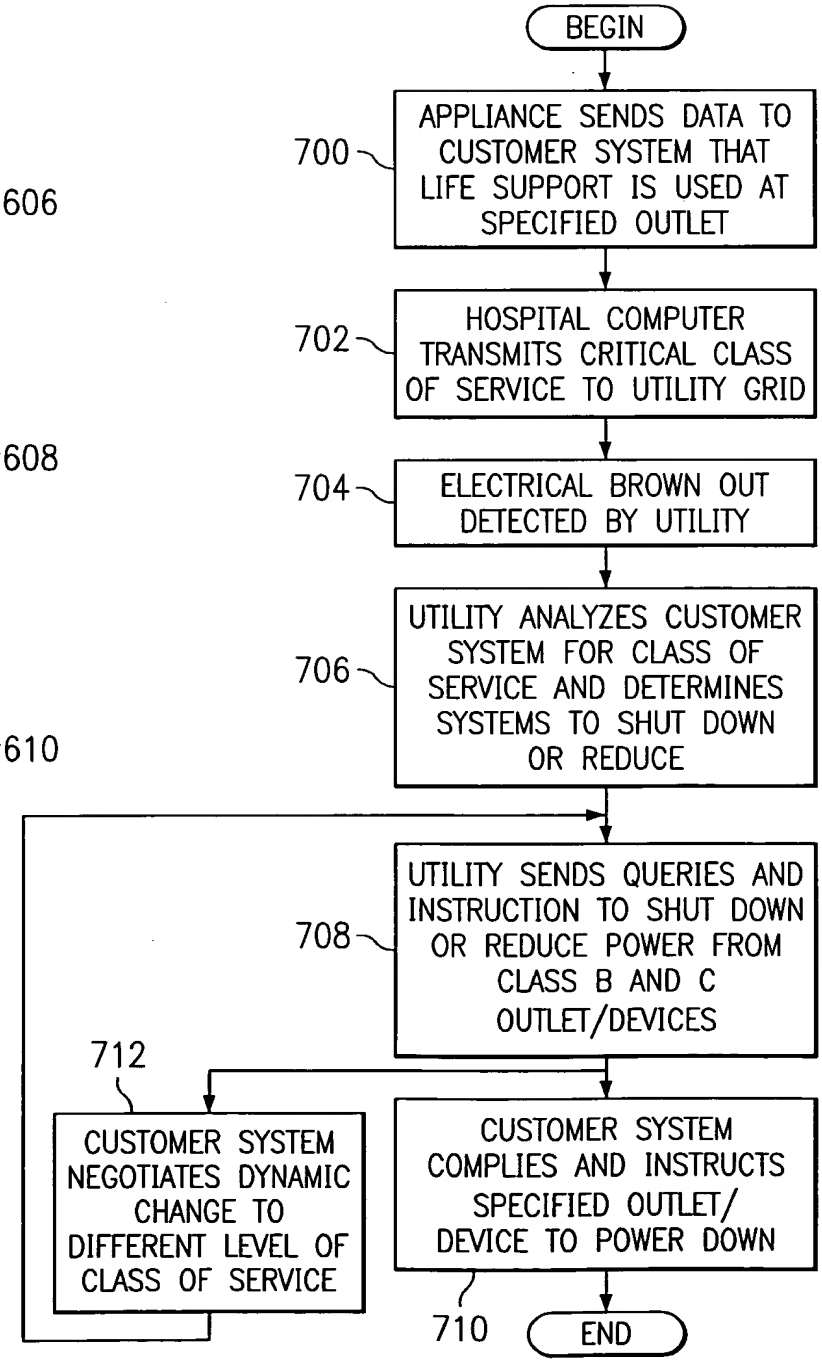

BEGIN
APPLIANCE SENDS DATA TO CUSTOMER SYSTEM THAT LIFE SUPPORT IS USED AT SPECIFIED OUTLET
700
HOSPITAL COMPUTER TRANSMITS CRITICAL CLASS OF SERVICE TO UTILITY GRID
702
ELECTRICAL BROWN OUT DETECTED BY UTILITY
704
UTILITY ANALYZES CUSTOMER SYSTEM FOR CLASS OF SERVICE AND DETERMINES SYSTEMS TO SHUT DOWN OR REDUCE
706
UTILITY SENDS QUERIES AND INSTRUCTION TO SHUT DOWN OR REDUCE POWER FROM CLASS B AND C OUTLET/DEVICES
708
712
CUSTOMER SYSTEM NEGOTIATES DYNAMIC CHANGE TO DIFFERENT LEVEL OF CLASS OF SERVICE
CUSTOMER SYSTEM COMPLIES AND INSTRUCTS SPECIFIED OUTLET/ DEVICE TO POWER DOWN
710
END

FIG. 8

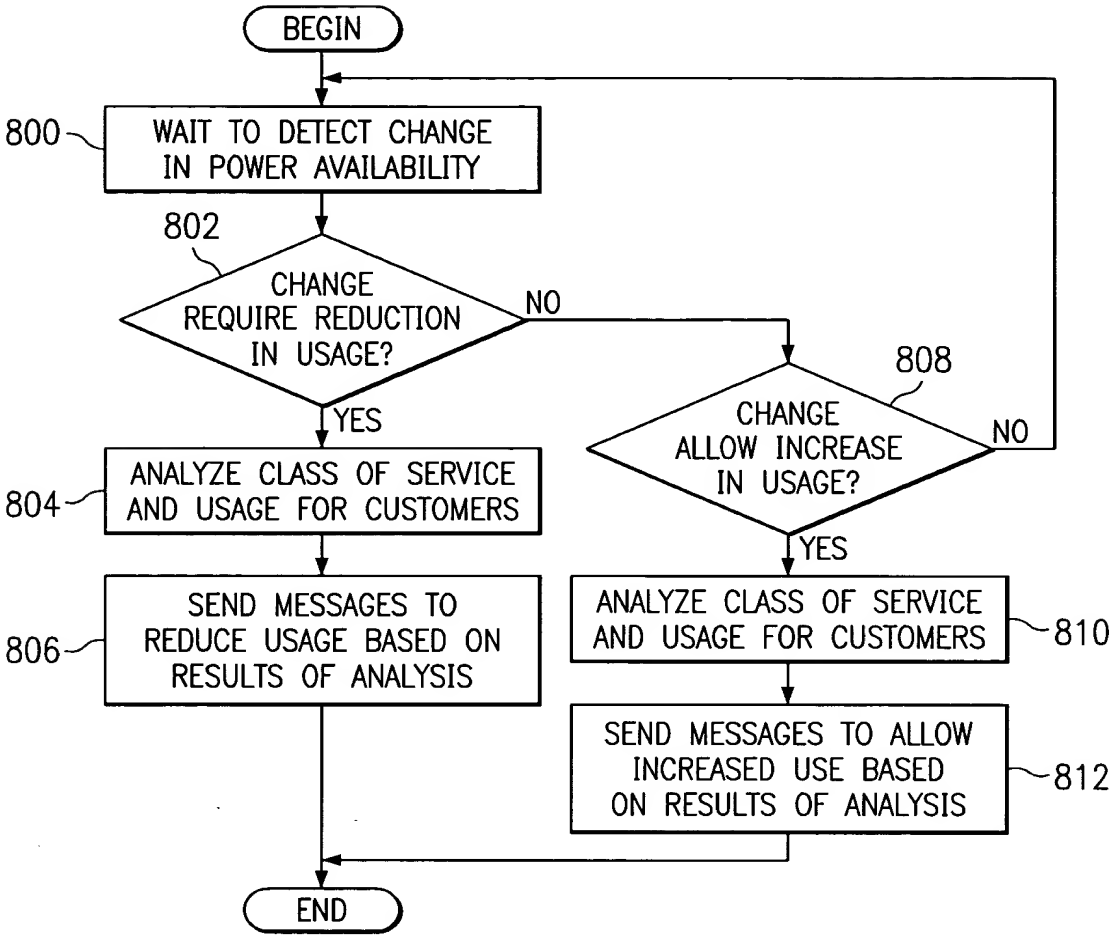


FIG. 9

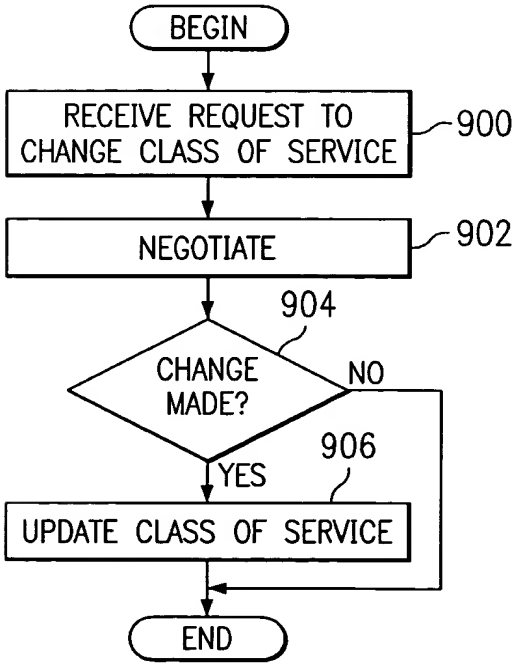


FIG. 10

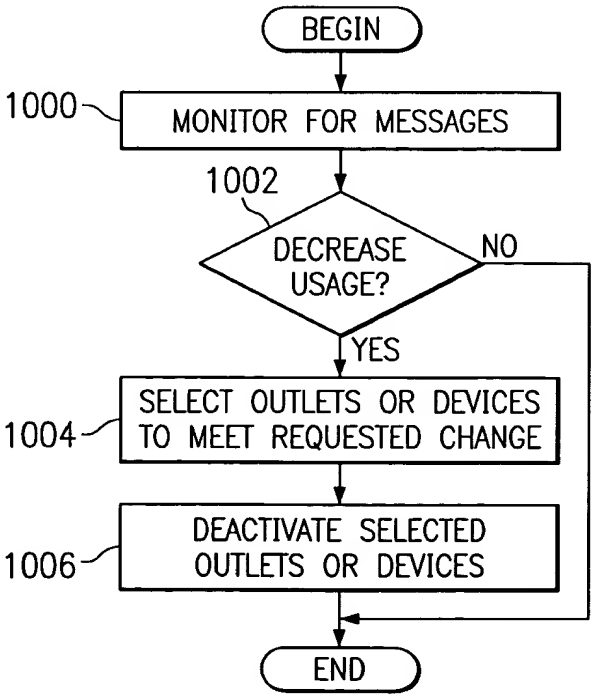


FIG. 11

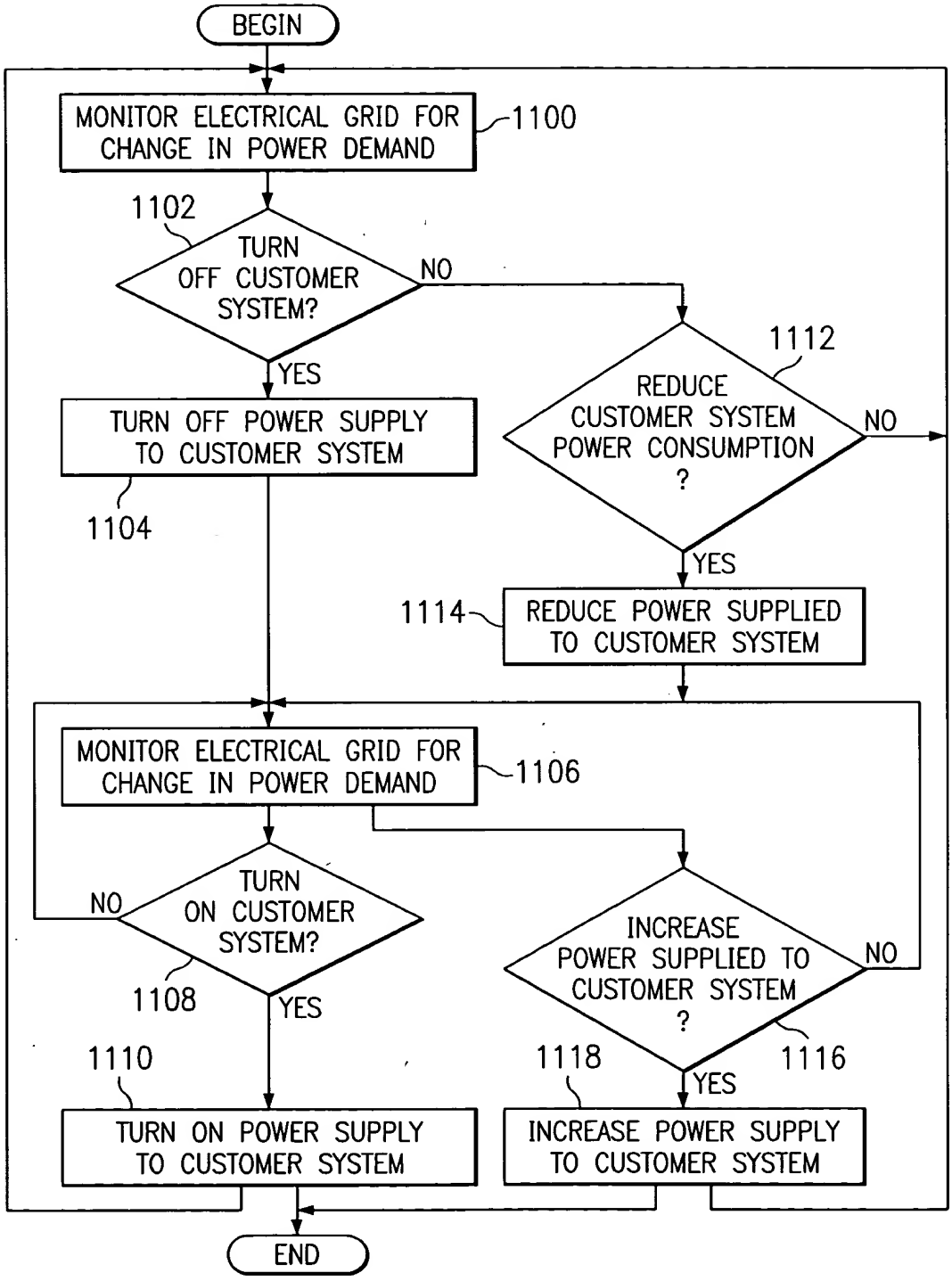

BEGIN
MONITOR ELECTRICAL GRID FOR CHANGE IN POWER DEMAND
1100
1102
TURN OFF CUSTOMER SYSTEM?
NO
YES
TURN OFF POWER SUPPLY TO CUSTOMER SYSTEM
1104
1112
REDUCE CUSTOMER SYSTEM POWER CONSUMPTION ?
NO
YES
1114
REDUCE POWER SUPPLIED TO CUSTOMER SYSTEM
MONITOR ELECTRICAL GRID FOR CHANGE IN POWER DEMAND
1106
NO
TURN ON CUSTOMER SYSTEM?
1108
YES
INCREASE POWER SUPPLIED TO CUSTOMER SYSTEM ?
NO
1116
YES
1110
TURN ON POWER SUPPLY TO CUSTOMER SYSTEM
1118
INCREASE POWER SUPPLY TO CUSTOMER SYSTEM
END

FIG. 12

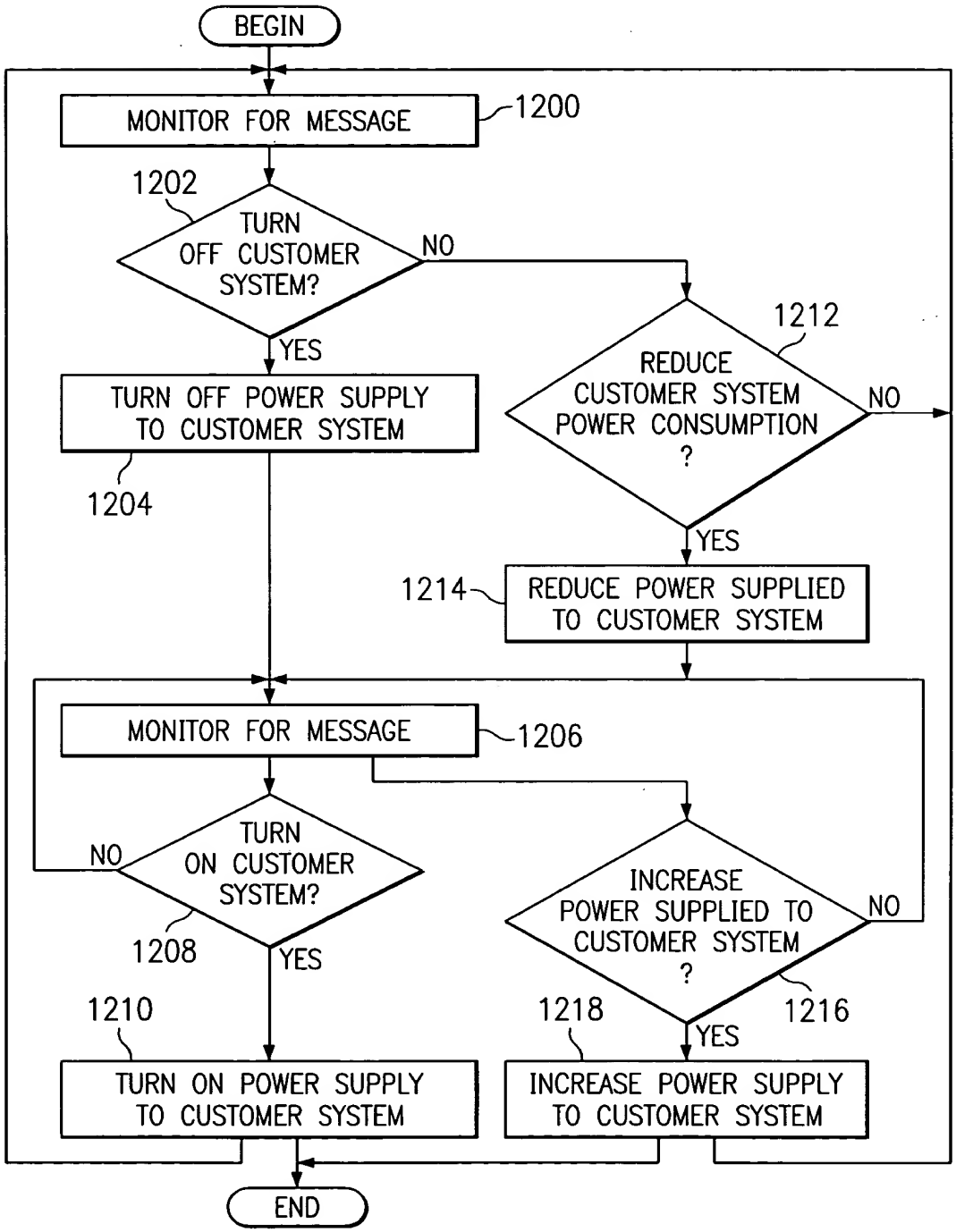

BEGIN
MONITOR FOR MESSAGE
1200
1202
TURN OFF CUSTOMER SYSTEM?
NO
YES
1212
REDUCE CUSTOMER SYSTEM POWER CONSUMPTION ?
NO
YES
TURN OFF POWER SUPPLY TO CUSTOMER SYSTEM
1204
1214
REDUCE POWER SUPPLIED TO CUSTOMER SYSTEM
MONITOR FOR MESSAGE
1206
TURN ON CUSTOMER SYSTEM?
NO
1208
YES
INCREASE POWER SUPPLIED TO CUSTOMER SYSTEM ?
NO
1216
YES
1210
1218
TURN ON POWER SUPPLY TO CUSTOMER SYSTEM
INCREASE POWER SUPPLY TO CUSTOMER SYSTEM
END

FIG. 13

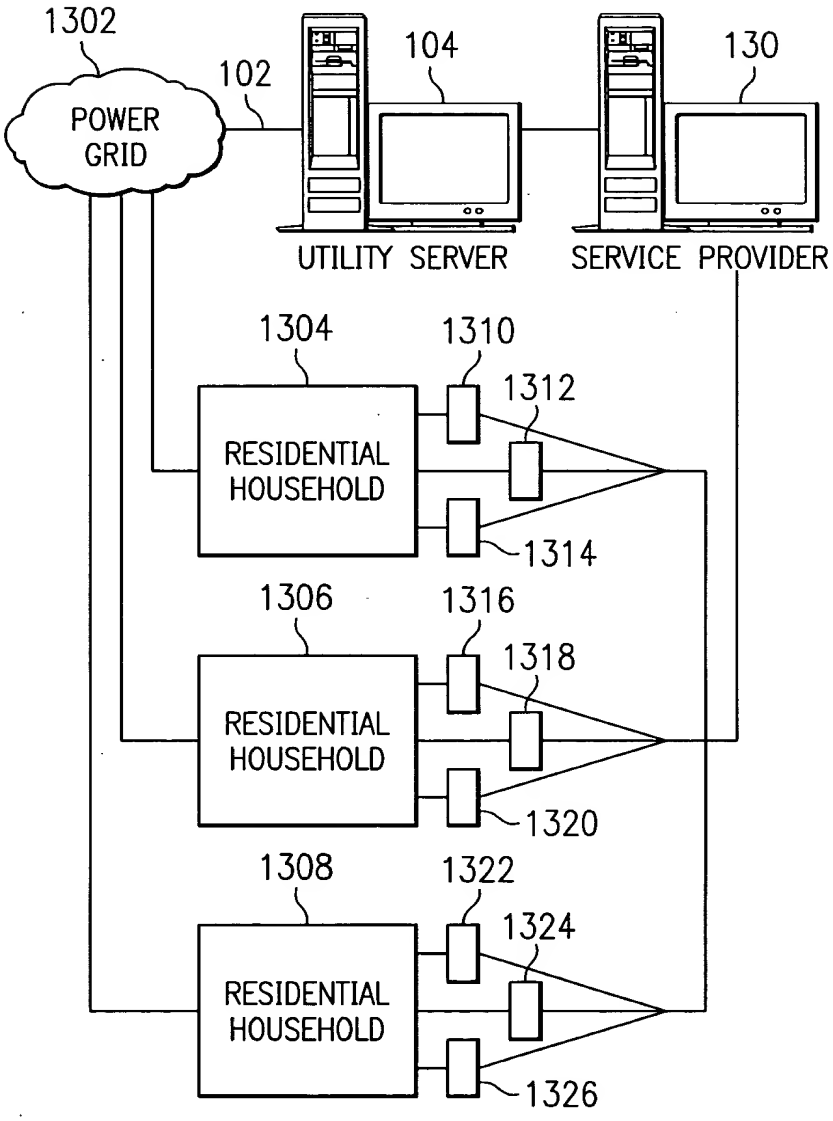

1302
POWER GRID
102
104
130
UTILITY SERVER
SERVICE PROVIDER
1304
1310
1312
RESIDENTIAL HOUSEHOLD
1314
1306
1316
1318
RESIDENTIAL HOUSEHOLD
1320
1308
1322
1324
RESIDENTIAL HOUSEHOLD
1326

FIG. 14

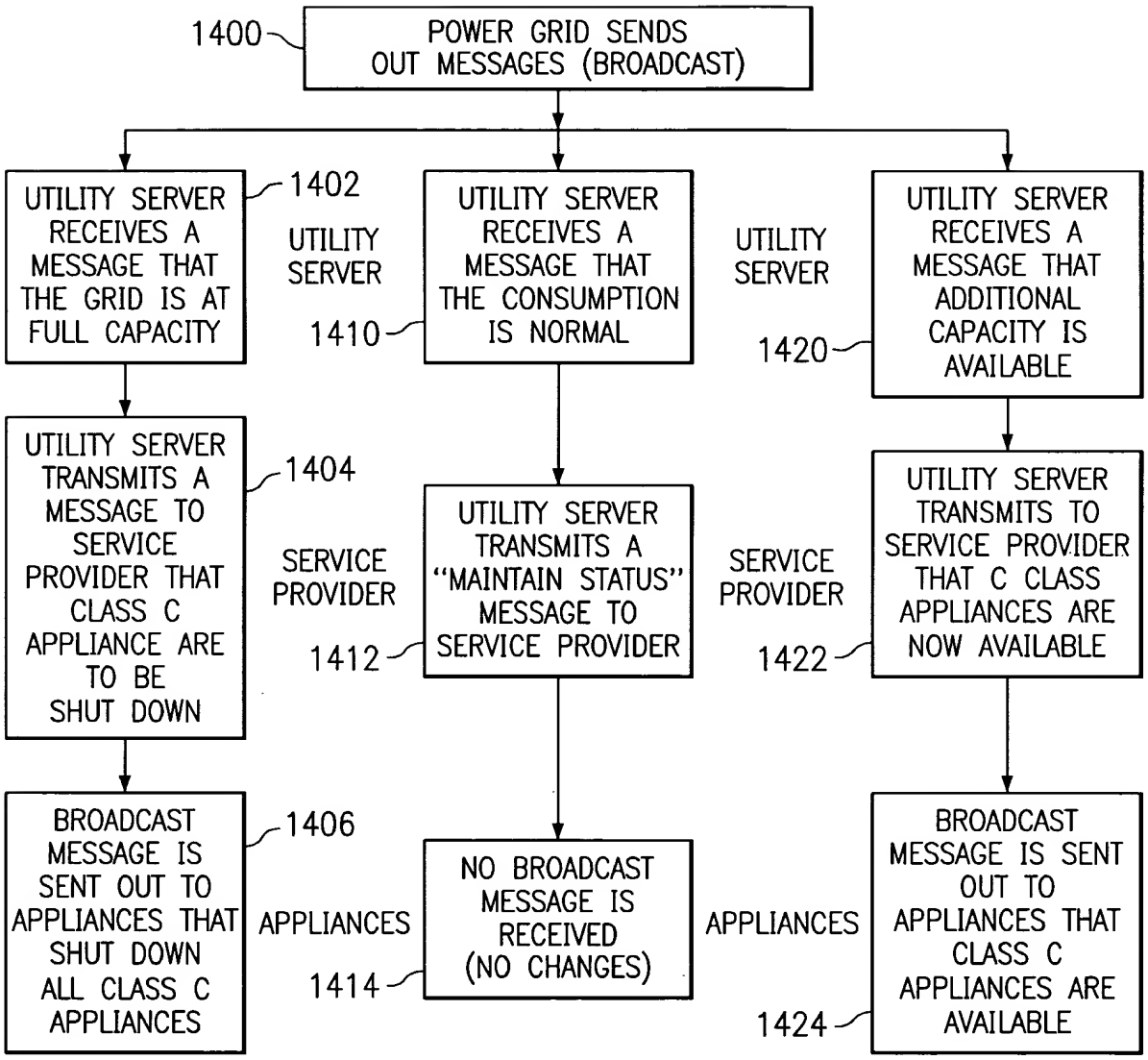
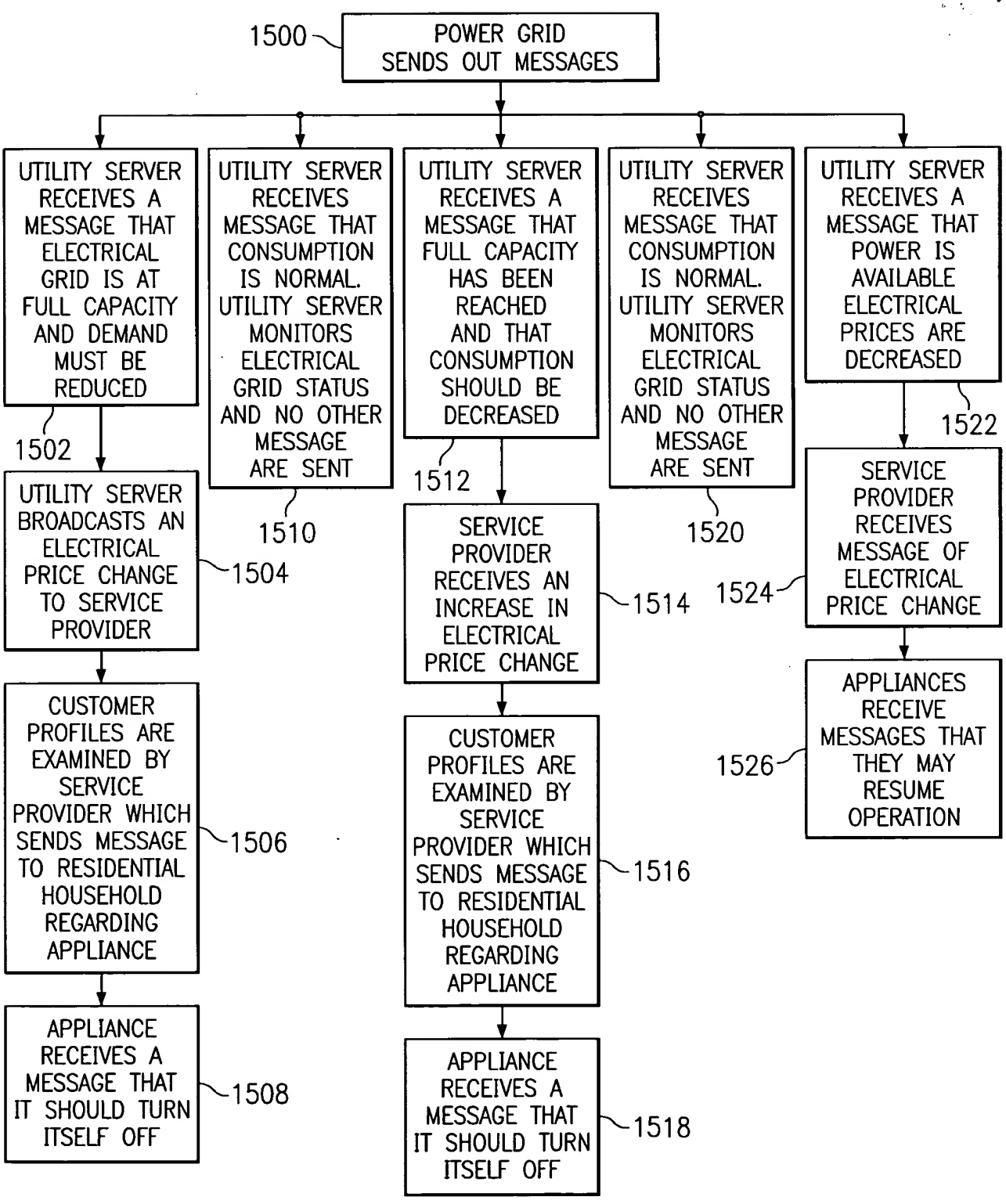

1400
POWER GRID SENDS OUT MESSAGES (BROADCAST)
UTILITY SERVER RECEIVES A MESSAGE THAT THE GRID IS AT FULL CAPACITY
1402
UTILITY SERVER
UTILITY SERVER RECEIVES A MESSAGE THAT THE CONSUMPTION IS NORMAL
1410
UTILITY SERVER
UTILITY SERVER RECEIVES A MESSAGE THAT ADDITIONAL CAPACITY IS AVAILABLE
1420
UTILITY SERVER TRANSMITS A MESSAGE TO SERVICE PROVIDER THAT CLASS C APPLIANCE ARE TO BE SHUT DOWN
1404
SERVICE PROVIDER
UTILITY SERVER TRANSMITS A "MAINTAIN STATUS" MESSAGE TO SERVICE PROVIDER
1412
SERVICE PROVIDER
UTILITY SERVER TRANSMITS TO SERVICE PROVIDER THAT C CLASS APPLIANCES ARE NOW AVAILABLE
1422
BROADCAST MESSAGE IS SENT OUT TO APPLIANCES THAT SHUT DOWN ALL CLASS C APPLIANCES
1406
APPLIANCES
NO BROADCAST MESSAGE IS RECEIVED (NO CHANGES)
1414
APPLIANCES
BROADCAST MESSAGE IS SENT OUT TO APPLIANCES THAT CLASS C APPLIANCES ARE AVAILABLE
1424

FIG. 15


1500
POWER GRID SENDS OUT MESSAGES
UTILITY SERVER RECEIVES A MESSAGE THAT ELECTRICAL GRID IS AT FULL CAPACITY AND DEMAND MUST BE REDUCED
1502
UTILITY SERVER BROADCASTS AN ELECTRICAL PRICE CHANGE TO SERVICE PROVIDER
1504
CUSTOMER PROFILES ARE EXAMINED BY SERVICE PROVIDER WHICH SENDS MESSAGE TO RESIDENTIAL HOUSEHOLD REGARDING APPLIANCE
1506
APPLIANCE RECEIVES A MESSAGE THAT IT SHOULD TURN ITSELF OFF
1508
UTILITY SERVER RECEIVES MESSAGE THAT CONSUMPTION IS NORMAL. UTILITY SERVER MONITORS ELECTRICAL GRID STATUS AND NO OTHER MESSAGE ARE SENT
1510
UTILITY SERVER RECEIVES A MESSAGE THAT FULL CAPACITY HAS BEEN REACHED AND THAT CONSUMPTION SHOULD BE DECREASED
1512
SERVICE PROVIDER RECEIVES AN INCREASE IN ELECTRICAL PRICE CHANGE
1514
CUSTOMER PROFILES ARE EXAMINED BY SERVICE PROVIDER WHICH SENDS MESSAGE TO RESIDENTIAL HOUSEHOLD REGARDING APPLIANCE
1516
APPLIANCE RECEIVES A MESSAGE THAT IT SHOULD TURN ITSELF OFF
1518
UTILITY SERVER RECEIVES MESSAGE THAT CONSUMPTION IS NORMAL. UTILITY SERVER MONITORS ELECTRICAL GRID STATUS AND NO OTHER MESSAGE ARE SENT
1520
UTILITY SERVER RECEIVES A MESSAGE THAT POWER IS AVAILABLE ELECTRICAL PRICES ARE DECREASED
1522
SERVICE PROVIDER RECEIVES MESSAGE OF ELECTRICAL PRICE CHANGE
1524
APPLIANCES RECEIVE MESSAGES THAT THEY MAY RESUME OPERATION
1526